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Alternative Strategies to Manage Feed Cost

Feed costs make up 60-70 percent of the total cost of producing meat turkeys and over 33 percent of breeder turkeys. Nutritionists strive to formulate feeds that contain the required nutrients for maximum and profitable performance using a variety of good quality, economically available ingredients. During the 1995-1996 crop year, tight supplies of grains due to poor harvest, increasing grain exports, and an expanding animal industry to meet local and world demand (USDA forecasts total broiler exports for 1996 were at 4.3 billion pounds, up 9% from 1995) caused a drastic increase in feed prices. During times of high feed prices, it is critical to evaluate alternative formulation and management strategies to reduce feed costs and ensure financial success.

The following are alternative strategies that could reduce feed costs:

1. Alternative Feed Ingredients

Alternative feed ingredients for corn and soybean meal vary from region to region and could include the following: wheat, barley, triticale, bakery by-products, pearl millet, distillers grains, canola, cotton seed meal, fish meal, meat and bone meal, corn gluten meal, peanut meal, etc. Alternative feed ingredients must be:

- Used with caution with young poults and chicks.
- Free of contaminants and toxins.
- Consistent and acceptable quality (investigate supplier quality control procedure).
- Compatible with feed mill storage capability.
- Able to produce good quality pellets and not affect the efficiency of the feed mill.

In general, alternative feed ingredients present a short term opportunity because the commodity suppliers of these alternative ingredients adjust their prices to reflect the demand for these ingredients or base their price per unit of protein/energy compared to soybean meal or corn. Figure 1 shows that in Ontario, Canada (1995-1996) the price of the "alternative ingredients", canola, meat meal and bone meal increased in a parallel fashion to the soybean meal price. Similarly, the price of bakery by-product and wheat increased as the price of corn increased (Figure 2).

Figure 1. Soybean Meal, Canola and Meat & Bone Meal Prices, US Dollars per Ton

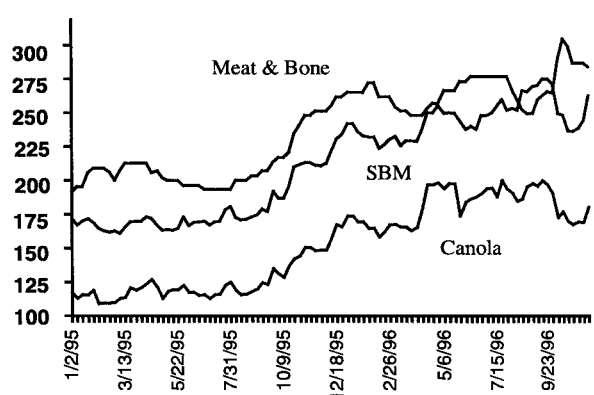

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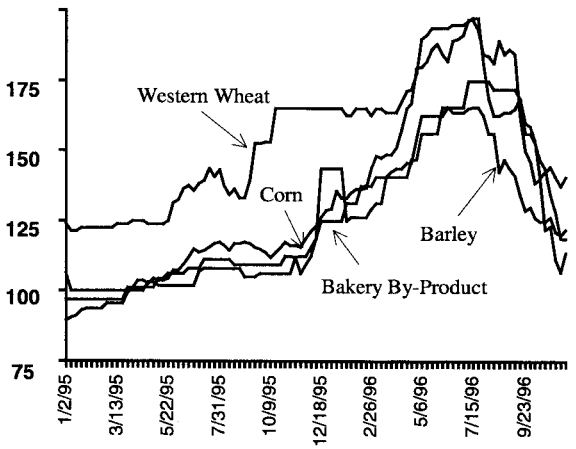
Figure 2. Corn, Western Wheat, Bakery By-Product, Barley Prices, US Dollars per Ton



2. Hedging

In 1995 and 1996 poultry growers operated in a tight economic situation because of the high feed prices. It is now evident that poultry growers around the world must match their production management skills with their financial management in order to maintain profitability. Hedging individual ingredients or complete diets is a strategy poultry growers could use to minimize their risk to ingredient market fluctuations. A "short hedge" could be used when the risk is that the price will fall while a "long hedge" could be used when the risk is that the price will rise.

3. Feed Mill Technology

Several companies in the USA and Canada have installed expanders or compactors to produce feed using high pressure conditioning. The temperature in the conditioning chamber can reach 240 to 250° F. The use of expanders is reported to improve pellet quality, increase starch gelatinization which in turn improves the metabolizable energy, reduce microbial contamination of the feed, and allow the use of more alternative and liquid ingredients. Initial research by some Canadian feed manufacturers indicates that the metabolizable energy of the diet can be slightly reduced without any adverse effect on feed conversion. Whether the improvement in feed conversion with the lower energy diet is due to better pellet quality or an increase in metabolizable energy is still not clear.

The main disadvantage of expanders is the initial investment. However, part of this investment could be offset by reducing the energy content of the diet, eliminating the use of pellet binders, and increased pellet production capacity.

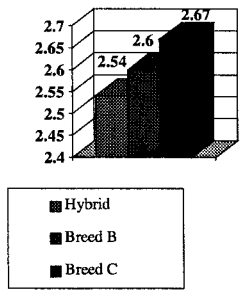
4. Breed Selection

Primary breeding companies achieve their genetic improvement by implementing different selection pressures for traits that will be of economical importance to their customers. Some primary breeding companies utilize only simple selection techniques, such as physical selection, while others utilize more sophisticated techniques such as selection index, BLUP (best linear unbiased prediction) and molecular genetics. As feed prices continue to increase the breed with the lowest feed conversion will have significant economic advantage. Results from Agrimetrics (Table 1) shows that there are differences in the feed conversion of the three primary breeds. For a producer that grows 10 million kg per year, a 6 point feed conversion advantage at $360 per ton of feed translates to about $216,000 in feed savings per year (Figure 3). Thus, selecting a breed with an advantage in feed conversion will significantly impact the financial return.

Table 1. Field Results - 1995

	Hybrid LW	BUT 6	Nicholas 700
Weight (lb)	32.2	30.9	32.4
Age (days)	131	132	134
Gain/day (lb)	0.24	0.23	0.24
Weight adjusted (30 lbs) feed conversion	2.54	2.60	2.67

Figure 3. Feed Conversion of Heavy Toms to 35 kg



If feed is $360/ton this means a Hybrid advantage of:

	Per Lb. Turkey	900 million lb.
Cost Over A	$0.0216	$216,000
Cost Over C	$0.0468	$468,000

5. Feed Formulation On a Digestible Amino Acid Basis

The price of soybean meal on November 18, 1996 was 25% higher than a year previous. One would expect other protein supplements to follow the same trend as soybean meal (Figure 1). Formulating on the basis of digestible amino acids will allow us to utilize lower protein diets, use more by-products and alternative ingredients. The use of lower protein diets will however necessitates the use of higher than normal levels of synthetic methionine, lysine, and threonine. Threonine is reported to be the third limiting amino acid in turkey diets and is normally not added with high protein diets. It is important to maintain the proper electrolyte balance in low protein diets that contain high chloride synthetic amino acids. Sodium bicarbonate could replace some of the salt to maintain the proper electrolyte balance.

Since the digestible amino acid requirements of turkeys are not well established, nutritionists must establish their own feed formulation database. One way is to add new nutrients such as digestible lysine, methionine, etc. to the ingredient nutrient profile. The second step is to establish requirements based upon digestibility. With a corn-soybean meal (ingredients with low nutrient variation) diet the nutrients could be reduced by about 15 to 20%.

6. Nutrient Density Of The Feed

This is probably the most difficult strategic decision because there are "two schools of thought". The first school advocates that feeding high density diets (high cost diets) will allow the birds to achieve their genetic potential and maximize return through improvements in gain, breast meat yield, feed conversion, and by early marketing of birds. The second school advocates feeding low density diets (low cost diets). Increasing the diet density in a linear fashion will increase feed cost linearly to a certain point after which there will be an exponential increase in feed cost. The nutritionist should be aware of this "fine line".

In general during high feed prices, birds should be fed diets that allow them to express their genetic potential for gain, feed conversion, and breast meat yield. Generally, birds should be marketed as early as possible in order to minimize the feed required for maintenance and thus increase feed efficiency.

Research at two different locations (Tables 2 and 3) have shown that feeding a low density diet will result in lower body weight for age. In general it takes about 7 to 10 days for the low density fed birds to achieve the weight of the high density fed birds. Research has also shown that feeding a high density diet will improve the feed conversion (Tables 4 and 5). The effect of diet density on breast meat yield was not consistent among the two research trials. One trial showed an increase in breast meat yield with increasing nutrient density of the diet (Table 6) while the other showed no response (Table 7). Increasing the nutrient density of the diet improved the performance of toms which improved the economic returns (Table 8). The economic return could be further improved if the housing cost of the extra 7 to 10 days required for the birds fed the low density diet to achieve the weight of the high density diet was not taken into account in evaluating the economic return.

Table 2. Effect of Amino Acid Level on Body Weight of Toms

	Amino Acid Level		
Age (days)	85	100	115
64	10.56	11.66	12.10
85	16.94	19.14	19.36
106	23.1	25.52	26.18
127	29.04	31.68	32.56
148	32.78	35.86	39.96
Daily gain (lb)	0.221	0.243	0.250
Days to 37 lbs	+18.8	+4.5	+0

ADM Research

Table 3. Effect of Protein/Amino Acid Level on Body Weight (kg) of Toms

	Protein/Amino Acid Level		
Age (days)	Low	Medium	High
63	9.9	10.12	10.12
84	16.5	16.94	17.38
105	22.44	23.32	23.98
126	28.16	29.92	30.58
146			36.96
153		38.06	
160	38.28		
Daily gain (lb)	0.238	0.249	0.254
Days to 30 lbs	+10.2	+2.6	+0

Midwest Research

Table 4. Effect of Amino Acid Level on Feed Conversion of Toms

	Amino Acid Level		
Period	85	100	115
42-127	2.88	2.72	2.65
42-148	3.11	2.92	2.86

P<0.5

ADM Research

Table 5. Effect of Protein/Amino Acid Level on Feed Conversion of Toms

	Protein/Amino Acid Level		
Age (days)	Low	Medium	High
63	1.94	1.84	1.78
84	2.11	2.04	2.00
105	2.40	2.35	2.27
126	2.68	2.60	2.51
146			2.70
153		2.83	
160	2.98		

Midwest Research

Table 6. Effect of Amino Acid Level on % Breast Meat Yield of Toms

Amino Acid Level	% Breast Meat (% of Evisc. Weight) 127 days	% Breast Meat (% of Evisc. Weight) 148 days
85	28.20	29.25
100	29.32	29.97
115	29.59	30.39
P<0.1		

ADM Research

Table 8. Effect of Amino Acid Level on the Economic Perfomance of Toms

Amino Acid Level	Period (Days)	Feed Cost ($/tom)	Live Wt. Return ($/tom)	Breast Meat Return ($/tom)
85	0-127	13.04	6.72	7.82
100	0-127	14.15	7.66	9.77
115	0-127	14.64	7.74	9.51
85	0-148	15.87	7.07	9.32
100	0-148	17.04	7.77	10.39
115	0-148	17.69	7.93	12.16

ADM Research

Table 7. Effect of Protein/Amino Acid Level on % Breast Yield of Toms.

	Age (days)	Body Weight (lb)	Carcass Weight (lb)	Breast Meat %
Low	160	38.58	30.80	30.64
Medium	153	38.69	30.95	30.72
High	156	38.51	30.86	30.26

Midwest Research

Summary

The high input cost of feed per unit of poultry meat and egg output justifies the attention feed prices receive. However, it is important to remember that lower cost feeds with low nutrient content may fail to maximize returns. A combination of the above mentioned strategies can help in stabilizing/ minimizing feed cost and thereby maximize returns.

Hybrid